

## Operational Efficiency Dynamics of the Nigerian Stock Market (1986-2010)

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### Abstract

The study investigated the operational efficiency of the Nigerian stock market between 1986-2010. This was necessary given the degree of thinness of the market. The objectives of the study were: to investigate the extent to which the operations of the market have contributed to the growth of the Nigerian economy and also to determine the functionality of the market. To achieve these objectives data were gathered on some capital market indicators from the stock exchange factbook of various years on market capitalization (MCAP), all share index (ASI) volume of transaction (VOLT) value of transaction (VALT) and number of listed companies (NLC) on the stock exchange. The data were tabulated, analyzed and tested using the ordinary least square statistical technique. Findings resulting from the test of data showed that NLC, VOLT, VALT, ASI and MCAP were positive and that increase in any of the above parameters would in turn cause an increase in the growth of the Nigerian economy at five and ten percent levels of significance. It further showed that the market was operationally weak form efficient. It was therefore recommended that government should continue to provide better macro-economic environment for the private sector to lead the economy on the part of sustainable growth and development.

**Keywords:** Operational efficiency, all share index, volume of transaction, value of transaction , economic growth.

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### 1. Introduction

The capital market is a highly specialized and organized financial market and indeed an essential agent of economic growth because of its ability to facilitate and mobilize savings and investment. To a very great extent, the positive relationship between capital accumulation and real economic growth has long been affirmed in economic theories (Anyanwu, 1993).

The success in capital accumulation and mobilization for development varies among nations, but it is largely dependent on domestic savings and inflows of foreign capital. Therefore, to arrest the menace of the current economic meltdown, efforts must be geared towards effective resources mobilization. It is in realization of this that consideration is given to measures for the development of capital market as an institution for mobilization of finance from the surplus sector to the deficit sectors.

Before the advent of capital market, banks and other money market institutions traditionally lend short-term funds which are not suitable for the funding of long-term projects with long generation periods, such as industries, infrastructures, power generation and telecommunication (Onoh, 2002). Power generation is known to require huge and long-term funds which only the capital market is in a more convenient position to provide. Capital market thus, constitutes the hub and accelerator of a rapid industrializing economy. It affords an enterprise within and across the borders of any country. However, it should be noted that, with the capital market, a small country enterprise can transform itself into a giant international conglomerate, with all the advantages of economies of scale and skill and high fly international profile (Onoh, 2002).

A capital market is a forum through which long-term funds are made available by surplus to the deficit units. It must however be noted that although all the surplus economic units have access to the capital market not all the deficit economic units have the same easy access to it. The restriction on the part of the borrowers is meant to enforce the security of the funds provided by the lenders (Mbat, 2001).

However, this paper is oriented towards discussing the most important and organized part of the capital market otherwise known as the stock market. The stock market is a forum through which sellers and buyers trade on the securities which have been listed on the exchange as well as a forum through which capital is raised by recognised corporate entities in the economy. The implication here is that the stock market is made up of two components parts; the primary and the secondary markets. The existence and allocative efficiency of the primary market is however dependent upon the existence and efficiency of the secondary market in all respect (Mbat, 2001). A stock market can appropriately be said to be an important instrument of economic development in a free market enterprise economy like Nigeria.

The stock market facilitates efficient allocation of resources to the appropriate users. It also enhances higher productivity and better realization of macroeconomic goals such as price stability, higher level of savings, greater export opportunities, more employment opportunities and higher standard of living for the populace. The instrument traded in the market include government bonds, shares and mortgage loans (Anyanwu, 1997). Participants in the Nigerian capital market include the Nigerian Stock Exchange (NSE), Discount Houses, Development Banks, Merchant Banks, Stock Broking Firms, Insurance and Pension Organizations, quoted companies, governments at all levels, individuals and the Nigerian Security and Exchange Commission (NSEC).

In Nigeria, the stock market which is “the engine of growth” is still undeveloping and emerging. In fact it is quite small when compared to other emerging stock markets in developing economies (Udoka, 2012). There are abundant evidences that most Nigerian businesses lack long term capital. The business sector has depended mainly on short term financing such as over draft to finance even long-term capital. Based on the maturity matching concept such financing is risky. All such firms need to raise an appropriate mix of short and long term capital (Deminguc-Kunt & Levine, 1996). Aside social and institutional factors inhibiting the process of economic development in Nigeria, the bottle neck created by the dearth of finance to the economy constitute a major setback to its development and growth. Also, the thinness of trading, low market capitalization, low turnover rates and illiquidity of the market, bottlenecks in

the clearing system, the buy and hold attitude of investors, the imposition of a price cap on share price movements and political/ party instability are some more nagging challenges hindering the operational efficiency of the stock market (Udoka, 2012).

Furthermore, the considerable ignorance of the stock market activities by majority of the masses has brought about low participation by firms and individuals engaging in the stock market. The stock market is faced with lapse between the delivering and settlement of stock transactions. Also affecting the stock market is the fact that most of the operators are not all connected on line and as such information is not available on time. The political climate in Nigeria has also caused operational inefficiency of the market. Again insecurities and challenges in some states of the nation where foreigners are held hostage and the religious crisis in the country are major problems hindering the operational efficiency of the stock market. Foreign investment cannot thrive well in a chaotic environment. If the Nigerian stock market is to harness fund from the local and foreign investors for viable investment opportunities that will bring about economic growth, it needs to be efficient. Most recent literature on the Nigerian capital market have recognized the tremendous performance the market has recorded in recent times. However, the vital role of the capital market operations in economic growth and development has not been empirically investigated thereby creating a research gap in this area.

The study is of significance as the recommendations based on the research findings would indeed be useful to *(i) The stock market policy makers, a study on the operational efficiency of stock market, is one key area that will provide important information to the government on the efficiency of the stock market and through that process, promote the formulation of policies that will well governed the market; (ii) The investors, the study will help provide information on how efficient the Nigeria capital market is, and thus will assist boost their interest in the market and contributions to the market; (iii) The academia, findings of this study will serve as empirical evidence on the operationality and functionality of the Nigerian stock market.*

## **2. Literature Review**

Although there could have been an emerging theory of speculative markets during the first half of the twentieth century, this was not to be. Instead, the early literature followed the path of accumulating a variety of empirical observations that did not sit easily alongside the paradigms of economics or the beliefs of practitioners. Bareinstein, (1992) had concluded that commodity prices fluctuate randomly, and later studies by Cowles and Jones (1937) was to show that US stock prices and other economic series also share these characteristics. This study was largely overlooked by researchers until the late 1950s.

The efficient-market hypothesis was developed by Professor Eugene Fama at the University of Chicago Booth School of Business as an academic concept of study through his publicised Ph.D thesis in the early 1960s at the same school. It was widely accepted up until 1990s, when behavioural finance economists, who had been a fringe element, became mainstream. Empirical analyses have consistently found problems with the efficient-market hypothesis, the most consistent being that stocks with low price to earnings (and similarly, low price to cash-flow or book value)

outperform other stocks. Alternative theories have proposed that cognitive biases cause these inefficiencies, leading investors to purchase overpriced growth stocks rather than value stocks. Although the efficient market hypothesis has become controversial because substantial and lasting inefficiencies are observed, Beechey (2000) consider that it remains a worthwhile starting point. The efficient market hypothesis emerged as a prominent theory in the mid 1960s. Paul Samuelson had begun a circulate Bachelors work among economists. In 1964 Bachelier's dissertation along with the empirical studies mentioned above were published in the anthology edited by Paul Cootner. In 1965 Eugene Fama published his dissertation arguing for the random walk hypothesis, and Samuelsson published a proof for a version of the efficient market hypothesis. In 1970 Fama published a review of both the theory and the evidence for the hypothesis.

The weak form of the EMH claims that prices fully reflect the information implicit in the sequence of past prices. The semi strong form of the hypotheses asserts that prices reflect all relevant information that is publicly available, while the strong form of market efficiency asserts that information that is known to any participant is reflected in market prices. The EMH consequently involves defining an efficient market as one in which trading on available information fails to provide an abnormal profit. A market can be deemed to be efficient therefore, only if we posit a model for returns. Hence tests of market became joint tests of market behaviour and models of asset pricing.

The definitional statement of the efficient market hypothesis is that prices fully reflect all the available information to verify this, the process of prices formation has to be specified in model form, in order to define more precisely the empirical implication of its reflection, Fama (1970) suggested three models for testing weak form efficiency; they are the expected return or fair game model, the sub martingale model and the random walk model.

An important corollary of the EMH is the concept that stock prices follows random walk, implying stock prices change randomly and in an unpredictable manner. If prices are bid up to their levels with all available information, then any changes in prices must be in reaction to new information, and new information must in essence be unpredictable, thus stock prices that change in response to new information must also move unpredictably. Consequently, past price movement cannot be used to predict future price movements. Brown (1953) tested this random walk theory by examining the behaviour of stock market prices over time to see if there was a recurrent determinable pattern in the prices. He found that there was none.

#### *Operational efficiency of the stock market*

A stock market according to Baumol (1965) and Fama (1970) is operationally efficient based on the degree of functionality. The basic areas of emphasis include, the transaction cost, which determines whether one should invests or not, availability of price information which guarantees that, it is easy enough for investors to know the prices of stock, through record keeping and effective and efficient information dissemination mechanisms; price continuity; which measures the ability of the market to sustain large trades in stock without significantly impacting the prices (that is to say that the market must be liquid); and timeless; which stresses that the investor must be able to complete a

transaction (in buying or selling of stocks) in the shortest possible time. Testing stock market efficiency from the operational perspective seeks to address these aspects of the market.

The operational efficiency of the Nigerian stock market according to Udoka, (2013) is the sole responsibility of various governmental bodies but the regulatory apex organization is the Nigeria securities and exchange commission (NSEC). The operational control of the stock exchange is made possible by the governing councils and branch. The other governmental bodies which can one way or other influence the operations of the security market are the central bank of Nigeria, the ministry of finance and the Nigerian Enterprise Promotion Board (NEPB). The NSEC is the regulatory apex organization of the Nigerian stock exchange. The body preceded by two earlier bodies named as (a) the capital Issue commission which existed between 1962 and 1973 and (b) the NSEC itself which was established in 1979 to carry out the functions of regulating the Nigerian Securities Market. The Earlier establishment were however, responsible for the same regulatory functions but were found to be deficient because of their limited functions and other events like the indigenization exercise which was not anticipated when the earlier bodies were set up. The Nigerian stock exchange (NSEC) is governed by the governing councils both at the national and branch levels. The councils are in charge of directing the day to day operations of the exchanges. The director general acts as the chief executives of the exchange and directs the daily affairs of the exchange together with the coordination of the branches. The branches have branch directors at the head to direct the daily affairs of their respective trading floors

#### *'Stock market and economic growth*

In principle the stock market is expected to accelerate economic growth, by providing a boost to domestic savings and increasing the quantity and quality of investment. The market is expected to encourage savings by providing individuals with additional financial instrument that may better meet their risk preferences and liquidity needs. Better savings mobilization may increase the saving rate. The stock market also provides an avenue for growing companies to raise capital at lower cost. In addition, companies in countries with developed stock market are less dependent on bank financing, which can reduce risk of credit crunch. The stock market therefore is able to positively influence economic growth through encouraging savings among individuals and providing avenues for firm financing (Charles & Charles, 2007).

Based on the performance of the stock market in accelerating economic growth, governments of most countries tend to have keen interest in its performance. The concern for sustained confidence in the market and for a strong investor's protection arrangement. Economic growth is generally agreed to indicate development in an economy because it transforms a country from five percent saver to a fifteen percent savers. Thus it is argued that for stock market to contribute or impact on the economic growth in Nigerian it must operate efficiently. Most often, where the market operates efficiently, confidence will be generated in the minds of the public and investors will be willing to part with hard earned funds and invest them in securities with the hope that in future they will recoup their investment (Udoka, 2013).

The theoretical explanation on the nexus between stock market and economic growth is further expatiated using Efficient Market Hypothesis (EMH) developed by Fama in 1965. According to EMH, financial markets are efficient or prices on traded assets that have already reflected all known beliefs if all investors about future prospect of equity returns. It shows that past information has been found to be useful in improving predictive accuracy. This assertion tends to invalidate the EMH in most developing nations.

Equity prices would tend to exhibit long memory or long range dependence because of narrowness of their market arising from immature regulatory and institutional arrangement. They noted that, where the market is highly and unreasonably speculative, investors will be discouraged from parting with their funds for fear of incurring financial losses. In a situation like the one mentioned above, has detrimental effect on economic growth of any country, meaning investors will refuse to invest in financial assets. The implication is that companies cannot raise additional capital for expansion. Thus, it suffices to say that efficiency of stock market is a necessary condition for growth in Nigeria (Nyong, 2003).

In another exposition, Gabriel (2002) as enunciated by Nyong (2003) lay emphasis on the Romanian capital market and concluded that the market is inefficient and hence it has not contributed to economic growth in Romanian. Ekundayo (2002) argues that a nation requires a lot of local and foreign investment to attain sustainable economic growth and development. The capital market provides a means through which this is made possible.

### **3. Research and Methodology**

This study therefore is undertaken to uncover the contributions of the operations of the stock market in the Nigeria economic growth and development if any, using the Gross Domestic Product (GDP) as proxy for economic growth and it is conceptualized as the total monetary value of all goods and services produced in an economy over a defined specified period of time say one year. The way the Gross Domestic Product reacts is a function of the magnitude and direction of the effects of the forces at play in the stock market. The study is also undertaken in this area to ascertain the level of operationality of the Nigerian stock market. Specifically, the objectives of the paper are:

*To investigate the extent to which the operations in the Nigerian stock market have contributed to the development and growth of the Nigerian economy;*

*To determine the degree of functionality of the Nigerian stock market;*

*To ascertain the relationship between market capitalization, volume and value of shares traded in the market, all shares price index, number of shares listed and gross domestic product.*

In order to achieve these objectives, the paper is divided into five sections. Section one is the introduction, section two is the overview of the stock market performance in Nigeria. The third section captures the research methodology. This is followed closely by data analysis and discussion of findings. The remaining section of the paper draws some managerial implications that emerge from the discussion.

Hypotheses:

Ho1: The operations of the Nigerian stock market have not significantly contributed to the growth of the Nigerian economy.

Ho2: The stock market is not functional at any level/form

Ho3: There is no significant relationship between market capitalization, volume and value of shares traded in the market, all shares price index, number of shares listed and gross domestic product.

The research design adopted for this study is ex-post facto research design. According to Ayara (2005) Ex-post facto research design is the design that permits the researcher to undertake a research in a situation where he has no control over the independent and dependent variables of the study. At the time of the study their manifestation has already occurred. A need to have a better understanding of this study leads to the consultation of a number of related materials. Most of the required data of this work were obtained from published articles, journals; bulletin especially those from federal office of statistics, articles and news paper publications.

The technique adopted in obtaining information for this study relied heavily on intensive library research. Secondary information such as published journals, text books, paper presentations, annual reports and internet materials. Data collection requires the researcher to travel outside Calabar especially to Abuja, Lagos and Ibadan. These data used in the study are annual estimate of most available data. It should be noted that lots of information are lost in rounding up of most data. Therefore, most of the variables to be used in the equations are not sensitive to seasonal changes which annual data might not capture.

#### *Model specification*

To carry out this study, two equations were formulated to link the Dependent and independent variables in the study. The equations were thus presented as follows:

$$GDP = a_0 + a_1 MC + a_2 ASI + a_3 VOLT + a_4 VALT + a_5 NLC + e_i \dots\dots\dots (1)$$

GDP = Gross Domestic Product as dependent variable in model 1

The explanatory variables (capital market indicators) for each of the model are:

MC = Market Capitalization of the NSE

ASI = All share index of the NSE

VOLT = Volume of Transaction on the NSE

VALT = Value of Transaction on the NSE

NLC = No of listed Companies on the NSE

$e_i$  = error term

$a_1, a_2, a_3, a_4, a_5$  = Coefficient of the appropriate research variables

$a_1, a_2, a_3, a_4, a_5 > 0$

GDP, is proxies for economic development while MC,ASI, VOLT, VALT and

NLC represent the capital market.

#### **4. Data analysis and discussion of findings**

##### *4.1 Data presentation*

The NSE All-share index had been on a steady rise from January 1986 up to the first quarter of 2008 when it peaked at 60, 953. No wonder the Nigerian Stock Exchange was adjudged the best performing stock exchange in 2007. But due to the recent global financial crisis, the NSE All-share index nosedived from its peak to 21, 214.10 in the last quarter of 2009. This represents about 65.16% decline. The market has never recovered from this decline; hence, the upward trend has not been restored. This, therefore, suggest that the Nigerian stock market has not pulled out of the shadow of the global financial crisis. A substantial decline in stock prices is expected to result in negative effects on consumption spending due to the household wealth and liquidity effects.

Market capitalization exhibited the same kind of movement with the all-share index. It was also on constant rise from the first quarter of 1986 up to the first quarter of 2008 when it peaked at 13.4billion naira. The same global financial crisis caused market capitalization to decline from its peak of 13.4billion naira in the first quarter of 2008 to about 7 billion naira in the last quarter of 2009. This represents a decline of about 48% within a space of about eight quarters.

**(Insert Table I here)**

##### *4.2 Unit root test results*

In literature, most time series variables are non-stationary and using non-stationary variables in the model might lead to spurious regressions (Granger and Newbold 1977). The first or second differenced terms of most variables will usually be stationary (Ramanathan 1992). In this study, all the variables are tested at levels, first and second differences for stationarity using the Augmented Dickey-Fuller (ADF) test. The result shows all the variables are non-stationary at level as presented in table 4.2. Furthermore, the result shows that all the variables are stationary at first or second difference. Hence, it can be concluded that all the variables except inflation are integrated of either order one [I(1)] or order two [I(2)].

**( Insert Table 2 Here)**

##### *4.3 Co-integration test results*



Given that all the variables, except one, are integrated of either order one or order two, co-integration test was carried out to establish whether the variables, though individually non-stationary, could be co-integrated as a group and also to establish the existence of a long-run relationship among them. The Johansen procedure is used to achieve this.

**(Insert Table 3 Here)**

Tables 3 report the estimates of Johansen procedure and standard statistics. This study used the degrees of freedom adjusted version of trace statistic to determine the number of co-integrating vectors since with the existence of small samples with too many variables or lag the procedure tends to overestimate the number of co-integrating vectors (Civcir, 2003). The tests statistics strongly rejects the null hypothesis in favour of two co-integration relationship at 5% significant level.

#### *4.4. Test of hypotheses*

Ho: The operations in the Nigerian stock market have not significantly contributed to the growth of the Nigerian economy.

Table 4 recorded a substantial improvement over Table 4.4 in the sense that the coefficient of determination or the adjusted  $R^2$  indicates that about 57.25% variability of the GDP in Nigeria can be explained by market capitalization, volume shares traded on the Nigerian stock market, value of shares traded on the Nigerian stock market, all share index and number of companies listed in the Nigerian stock market. The DW statistic in our output is 2.064 and is indicative that there is no serial correlation. With the F-value 9.284 ( $p < 0.000006$ ) for the regression, we reject the null and accept that the regression is significant overall.

The estimated coefficients for NLC, VOLT, VALT, MCAP and ASI are positive. This implies that there exist a direct relationship between these parameters and the growth of Nigerian economy. Invariably increases in any of this parameter will lead to a corresponding increase in the growth of Nigerian economy. These results are all statistically significant at both 5 and 10 percent level of significance.

**(Insert Table 4 Here)**

### **5. Discussion of findings**

The findings of this study revealed that there exists a significant relationship between number of companies listed on Nigerian stock market and the growth of Nigerian economy. This finding implies that increased in the number of companies listed on Nigerian stock market will lead to an increase in the growth of Nigerian economy. This finding agrees with the finding obtained by Bhana (2002) who found in study on the relationship between number of listed companies on the Johannesburg stock exchange and the growth of South African economy that there exist a significant relationship between number of listed companies and the growth of the economy.

One of the finding of this study also revealed that there exists a significant relationship between market capitalization and the growth of Nigerian economy. This finding agrees with the finding obtained by Kukah (2007) who in his study discovered that there exist a significant relationship between the market capitalization ratio obtained by the stock market and the growth of economy of that country.

## 6. Conclusion and Implications

Many studies have been conducted to explore the variations of the operational efficiency of the Nigerian capital markets. The results of this study showed that there existed a significant influence of market capitalization ratio to the growth of Nigeria economy. The volume of share traded and the value of shares traded significantly relates to the growth of the Nigerian economy.

On the basis of the findings of this study, the following policy recommendations are made.

*To formulate active and flexible monetary policies to check unfavorable developments in the market as they arise.*

*The Federal government should continue to pay particular attention to price stability as one of the key macroeconomic policy objectives in order to curb inflation.*

*The government should continue to provide better macroeconomic environment for the private sector to lead the economy on a path of sustainable growth and development.*

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**Table 1:**Capital market indicators

	<i>GDP</i>	<i>MCAP</i>	<i>VOLT</i>	<i>VALT</i>	<i>ASI</i>	<i>NLC</i>
1986	73061.9	7.7	98	102	167.8	138
1987	108885.1	8.9	109	132	190.9	143
1988	145243.3	9.7	163	187	233.6	156
1989	224796.9	12	186	239	325.3	159
1990	260636.7	15.9	278	293	513.8	162
1991	324010	22.6	321	347	783	168
1992	549808.8	32.5	398	381	1107.6	170
1993	1132181	47.4	473	402.3	1544	174
1994	1457130	66.4	524	569.7	2205	177
1995	2991942	180.3	397	1838.8	5092	181
1996	4135814	285.6	882	7100	6992.1	183
1997	4300209	292	1300	11100	6440.51	182
1998	4101028	263.3	2100	13600	5672.76	186
1999	4799966	299.9	3900	14100	5266.43	196
2000	6850229	478.6	5000	28200	8111.01	195
2001	7055331	662.6	5900	57600	10963.11	194
2002	7984385	763.9	6600	60300	12137.72	195
2003	10136364	1359	13300	120700	20128.94	200
2004	11673602	2112	19210	225820	23844.45	207
2005	14572240	2900	26700	262940	24085.76	214
2006	18564600	5120	36700	470253	33189.3	202
2007	22848900	13295	138100	2100000	57990.22	212
2008	67702	9563	353565	1679144	3144082	231
2009	716943	70308	173735	685716	208272	232
2010	976536	71243	2156784	721456	217653	243

Source: Nigeria Stock Exchange Factbook

MC = Market Capitalization of the NSE; ASI = All share index of the NSE; VOLT = Volume of Transaction on the NSE; VALT = Value of Transaction on the NSE; NLC = No of listed Companies on the NSE

**Table 2:** Unit root test - augmented dickey fuller test

<i>Variables</i>	<i>Trend</i>	<i>At Level</i>	<i>At 1<sup>st</sup> Difference</i>	<i>At 2<sup>nd</sup> Difference</i>	<i>Order of integration</i>
<i>LASI</i>	Without	-1.79	-6.54*	-8.40*	I(1)
<i>LMKC</i>	Without	-0.67	-3.34**	-7.06*	I(2)
<i>NLC</i>	Without	-3.21**	-5.60*	-9.07*	I(0)
<i>LVOLT</i>	Without	-2.61	-4.16*	-6.44*	I(1)
<i>LVALT</i>	With	-2.96	-8.63*	-9.01*	I(1)
<i>LGDP</i>	With	-1.21	-3.96**	-9.22*	I(2)

Source: Computed by the author

\*Significant at 1%, \*\*Significant at 5%

**Table 3:** Johansen maximum likelihood cointegration test for GDP in Nigeria

<i>Eigenvalues</i>	0.305	0.225	0.154	0.106	0.075
<i>Hypothesis</i>	r=0	r=1	r=2	r=3	r=4
<i>Trace test</i>	90.827*	56.942*	33.206	17.675	7.278
<i>Critical value at 5%</i>	76.973	54.079	35.193	20.262	9.165

**Source:** Computed by the author

\*Indicates rejection of the likelihood ratio tests at 5% significant level.

**Note:** None of the deterministic variable is restricted to the co-integration space and trace test is adjusted for degrees of freedom. The critical values are taken from MacKinnon-Haug-Michelis (1999)

**Table 4:** Parsimonious error correction result (LGDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.052078	0.013756	3.785794	0.0003
D(NLC(-1))	0.465984*	0.094547	4.928610	0.0000
D(LVOLT(-1))	0.621146*	0.115648	2.880366	0.0051
D(LVALT(-2))	1.544743*	0.531499	2.906390	0.0047
D(MCAP(-2))	0.127901	0.073500	-1.740145	0.0857
D(ASI(-4))	0.003528**	0.001586	2.224506	0.0289
ASIECM(-1)	-0.071414*	0.024126	-2.960000	0.0040
R-squared	0.647762	Mean dependent var		0.053375
Adjusted R-squared	0.572483	S.D. dependent var		0.128754
S.E. of regression	0.105979	Akaike info criterion		-1.568222
Sum squared resid	0.898528	Schwarz criterion		-1.294711
Log likelihood	80.98908	F-statistic		9.283793
Durbin-Watson stat	2.063871	Prob(F-statistic)		0.000006

Dependent Variable: D(LGDP)

Method: Least Squares

Date: 07/13/12 Time: 23:09

Sample(adjusted): 1987:2 2009:4

Included observations: 24 after adjusting endpoints

**Source:** Computed by the author